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Procedia - Social and Behavioral Sciences 191 (2015) 2396 – 2401

Procedia
Social and Behavioral Sciences

WCES 2014

The Good Reader of Digital World, Digital Natives: Are They Good Writer Also?

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Abstract

Digital natives have natural skills of using technology. In spite of that skill, their role, as the producer of digital world, is an arguing point of this study. In order to discuss that point, a training course for children, "Programming with Small Basic", was designed. The study group is consisted of nineteen children, aged 11 to 14. Dominant-less dominant quantitative-qualitative sequential mixed research method was used in the study. Collected data were analysed by using descriptive analysis, content analysis and Wilcoxon test (SPSS 21.0). The results show that digital natives are good readers of digital world but they need to be supported to become good writers of that world.

Selection and peer-review under responsibility of the Organizing Committee of WCES 2014

Keywords: Digital Natives, Digital World, Informatics Education, Producer Role of New Generation

1. Introduction

In today's digital world, many factors rapidly change and reshape individuals' lives. There is a new generation, who is different from their predecessors in that changing and reshaping environment. They are natural members of digital world, called as digital natives (Prensky, 2001), net generations (Tapscott, 1998; Oblinger & Oblinger, 2005), millennials (Howe & Strauss, 2000; Lancaster & Stillman, 2010) in the literature. Digital technologies are ordinary tools of this generation's daily life (Palfrey & Gasser, 2010; Tapscott, 2009; Prensky, 2004, 2001). Those children are very comfortable with using new technologies and they can immediately adapt those technologies without feeling fear for misuse failure. (Rikhye, Cook & Berge, 2009; Bennet, Maton & Kervin, 2008; Gunther, 2007).

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Selection and peer-review under responsibility of the Organizing Committee of WCES 2014
doi:10.1016/j.sbspro.2015.04.444

However their comfortableness is not observed while taking their producer role into consideration. Resnick et al. (2009) claimed that in spite of new generation's highest interaction percentage with digital media, less of them have developed games, animations and simulations. So they can be called good readers of digital world but not good writers. The goal of this research is to understand the situation of reader and writer roles of the new generation living in Istanbul. The research questions addressed are: (1) what is the level of being a reader in digital world, (2) what is the level of being a writer in digital world, (3) can be there any improvement in the level of being a writer by giving education?

2. Method

2.1. Research Model

Dominant-less dominant quantitative-qualitative mixed method was used in the research. In the dominant quantitative part, statistical analysis and descriptive analysis were used. In the less dominant qualitative part, data from observations and interviews were analysed via content analysis.

2.2. Participants

In this research we focus on Prensky's (2001) definition of "native speakers of the digital language of computers, video games and the Internet". Study universe of this research is children of 11-14 years old, who live in Istanbul. Study group, which was selected from that universe, contain 19 children (16 boys, 3 girls), who have same computer literacy level.

2.3. Data Collection Tools and Analysis

A training program, containing three-week period, was designed in order to improve children's game design and programming skills. Training materials were prepared in order to teach Microsoft Small Basic programming language. Table 1 illustrates the three-week period of training and its content.

Table 1. The three-week period of training and its content.

Week 1	Week 2	Week 3
• Introducing to Small Basic • Defining Rules, Groups and Courses • Preparing for Programming • Defining Software and Programming Language • What is Data? • Decisions • Conditions and Branching	• Loops • Programming-Graphics • Fun with Shapes • Programming with Tortoise • Array and Stack	• Objects I • Objects II • Objects III • Game Programming I • Game Programming II • Let's share

After preparation of training program, computer literacy tests were prepared. Those tests were applied to study group in order to determine their computer literacy level and to get a homogeneous group, accordingly. After applying, those tests were evaluated by three different trainers for the sake of reliability.

An achievement test, Programming with Small Basic, was prepared for measuring the success of training program and it was applied as pre and post-test. The collected data were analysed via Wilcoxon Signed Rank test by using SPSS 21.0. On the other hand, a questionnaire, "My Role in Digital World" was prepared for determining study group's level of being a reader and writer in digital world. That questionnaire contains 29 multiple-choice questions and 25 5-point Likert scale items. In the training process, individual interviews were conducted and observations of trainers were also recorded. The research questions tried to be answered by quantitatively and qualitatively collected and analysed data.

3. Findings

3.1. Findings of research question 1: What is the level of being a reader in digital world?

The evaluation parameters for this question are technology access opportunity at home, having mobile phone, time spent in digital world, comfortableness in ICT usage, dependency on digital world. Table 2 illustrates percentages and frequencies of study group's mobile phone ownership and its duration.

Table 2. Percentages and frequencies of study group's mobile phone ownership and its duration

Ownership	%	N
Less than 1 year	10	2
Between 1 and 5 years (less than 5 years)	26	5
5 years and more	42	8
Total	78	15

In Table 2 it can be seen that most of children in study group (78%) have mobile phone. Those mobile phones are smart phones. The 22% of study group do not have mobile phones. Additionally technology access opportunities at home, from their early childhood to present day, were also questioned. Table 3 illustrates percentage and frequency of study group's ICT access.

Table 3. Percentages and frequencies of study group's ICT access

	ICT on their homes		ICT on their homes since their early childhood	
	%	N	%	N
Smart Phone	100	19	0	0
Tablet PC	74	14	0	0
Desktop PC	79	15	68	13
Notebook	100	19	53	10

The results presented in Table 2 indicated that most of children in study group had a chance to get experience with desktops and laptops since their early childhood. They have already different ICT tools at home, such as smart phones, tablet PCs, laptops and desktops.

The study group's time spent in digital world (as online and offline status), were also analysed. In Figure 1 it can be seen that percentages of study group's online and offline time spent.

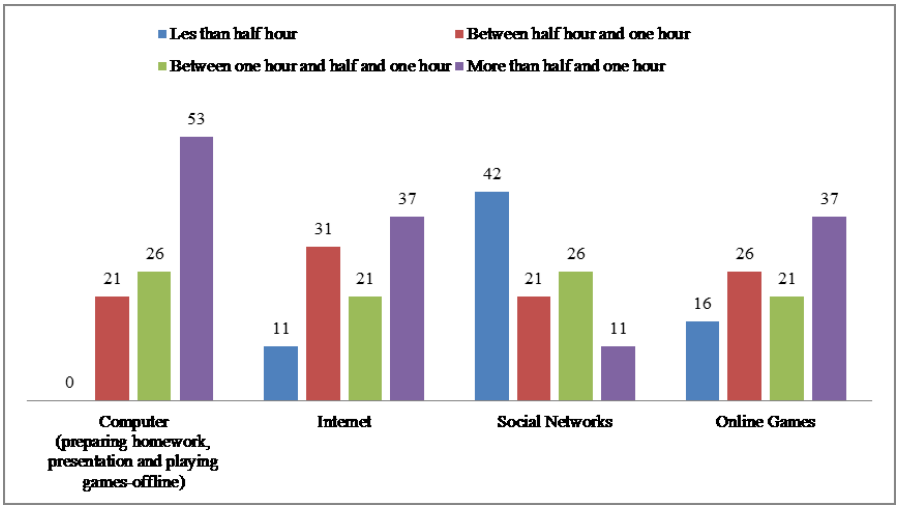

Figure 1. Percentages of study group's online and offline time spent

In Figure 1 it can be seen that study group mainly spent at least one hour while they were online or offline. They spent at least one hour (11 children) for online games and surfing on Internet. It was understood that all children in study group mainly prefer web sites or channels, which contain interesting information and videos, movies.

Comfortableness in ICT usage and dependency on digital world were specified via questionnaires and observations in training process. In Table 4 it can be seen that percentages and frequencies of study group's comfortableness in ICT usage.

Table 4. Percentages and frequencies of study group's comfortableness in ICT usage.

	Strongly Disagree		Disagree		Uncertain		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
I am anxious when I see an error message on screen.	8	42	5	25	2	11	2	11	2	11
I have nothing to do when computer has been frozen.	7	37	7	37	3	16	1	5	1	5
I prefer using MS Word than using pen and paper.	8	42	3	16	0	0	4	21	4	21
I like learning new programs.	1	5	1	5	2	11	1	5	14	74
I am scared to crush computer while using computer in order to learn a program.	7	36	6	32	0	0	4	21	2	11

In Table 4 it can be seen that most of children in study group did not feel themselves desperate, when they were face to error messages (68%) and/or frozen computer (74%). It was also observed that when their computers were frozen in training process, study group tried to solve by themselves.

In Table 5 it can be seen that percentages and frequencies of study group's dependency on digital world.

Table 5. Percentages and frequencies of study group's dependency on digital world

	Strongly Disagree		Disagree		Uncertain		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
I do not know how the time goes by while playing on computer	3	16	2	11	3	16	4	21	7	36
I do not know how the time goes by while spending time on internet.	4	21	3	16	2	11	3	16	7	36
If one day, whole computers never run again, I feel like I am dead.	2	11	2	11	1	5	5	26	9	47
If one day, whole internet connections stopped, I feel like I am dead.	1	5	3	16	1	5	6	32	8	42

In Table 5 it can be seen that more than half of children in study group did not know how the time goes by while they were hanging out (for online 57%, for offline 52%). Likewise it was observed that study group stuck on computers even in time-out. Because of their focusing computers, trainers warned them in order to start courses. Study group was just only left from computer for basic needs, not for talking to each other or playing face to face games.

In order to answer research question 1, the evaluation criteria was reviewed. According to that review, study group has higher percentage for every criterion. Because of those percentages, it was decided that they have good reader role in digital world.

3.2. Findings of research question 2: What is the level of being a writer in digital world?

Study group's the level of being a reader in digital world represents their productivity. The main evaluation criteria for that productivity are to create, to develop movie programs, animations, computer game, programming, web pages, and web sites. Here are some of study group's statements about productivity:

> *"I never programmed something; I hope I can learn it here. Even if I can develop a calculator, I'll be so happy…" (C1E13)*

"I really like to play computer games, but I never develop one, but I wish to. Is it really possible?...." (C6E12)
"No, I never design and put one of my videos on YouTube. But I found one video about me, which was uploaded long time ago. It was really interesting to share myself with other…" (C9E14)
"Even I have no idea what kind of tools for creates an animation. But I would love to learn… Yes there is some movie maker programs on Windows, but I didn't think about to create and upload something by using them.." (C18K14)
"No I don't have personnel web page, yes a couple of my friends have… But I really don't know how to design. But I really want to design mine…" (C19K11)

When study group's sentences were analysed by using evaluation criteria, it was realised that there was no step or action for productivity. Thus it was decided that they didn't have any writer role in digital world.

3.3. Findings of research question 3: Can be there any improvement in the level of being a writer by giving education?

In order to understand there was a statistically significant difference or not, pre and post-test were applied in training process. Because of not fulfilling the parametric test assumptions, collected data were analysed by using Wilcoxon Signed Rank test via SPSS 21.0. Table 6 illustrates results of Wilcoxon Signed Rank test.

Table 6. Results of Wilcoxon Signed Rank test

Exam Result	Sort	N	S. O.	S. T.	Z	p
Before Training	Negative	0	0	0		
	Positive	19	10,00	190.00		
After Training	Equal	0			-3.842	0.00
	Total	19				

From Table 6, we see that training program has statically significant difference on study group ($p < .05$; $Z = -3,842$). When the developed materials of study group and the observation of trainers were analysed, it was seen that 31% of study group (6 children) successfully developed computer games, which contain basic rules, feedbacks and 51% of them (10 children) tried to develop games but those games were unfinished and deficient. The rest of study group (15%- 3 children) could not develop any games but they only understand how to create a computer programme. At the end of training program, it was asked that what kind of projects they have for future. Here are some of study group's sentences about further productivity ideas:

"It was really wonderful to upload my game, but I will develop better one. I just want to see my friends when they were playing my games.." (C6E12)
"I could not finish my game, but I want to improve it. I already checked some game engine… I tried to design some character on pages for my new game ideas.." (C16E14)
"I developed a calculator, it was fun. I will try to develop another program. I watch some videos about Php…"(C3E13)

Because of training program, study group have chance to meet with a tool, which will be helpful for their writer role. When their sentences were analysed, it was realised that, they wanted to improve their experience. Thus it was decided that positive improvement, in their writer role, was fulfilled.

4. Results and Discussion

According to our findings, which were evaluated by our criteria; study group's level of being a writer in digital world is very good. Likewise Prensky (2001) claimed that new generation used a digital language and they felt the need to be connected, to show continuous presence. Ugras (2012) conducted a research, with 494 youth of 13-17

ages in Turkey; she also showed that their willingness to act in the digital world is quite high. In spite of being a good reader of digital world, study group's level of being a writer in digital world is too insufficient. With training program they have chance to learn a tool/programming language in order to produce/write something in digital world. It is clear that children in study group are good readers of digital world. But they need to be directed in order to manage and transfer their potential to be good writers. Those directions should be guided by teaching suitable programming language, controlling their web surf and guiding for useful and helpful information source such as web pages, forums, blogs, etc.

5. Conclusion

In conclusion, the results provide that being a good reader is helpful for learning new tools/programs, and directing new generation has important role for their being good writers of digital world. Therefore in order to be good writers of digital world, digital natives should be supported to learn programming languages and tools, which are suitable for their interest and habits.

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